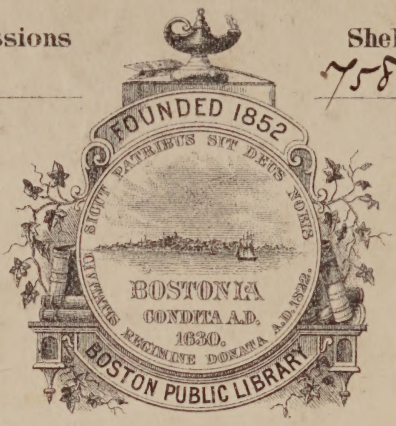
BOSTON PUBLIC LIBRARY
3 9999 08654 160 2

Accessions

Shelf No.
7588.127



Received Feb. 13, 1893.

Heliotype Printing Co.

H. H. Underwood, M.D.

REBUTTING TESTIMONY

OF THE

OPINIONS

OF THE

PROFESSORS OF HARVARD UNIVERSITY

BEFORE THE COMMITTEE OF THE LEGISLATURE ON THE PETITION FOR A LICENSE LAW.

ALSO,

REVIEW

OF

GOVERNOR ANDREW'S ARGUMENT,

SO FAR AS RELATES TO ALCOHOL AS A POISON.

BY

ALBERT J. BELLOWS, M. D.

C

BOSTON:
PUBLISHED BY BELA MARSH,
No. 14 Bromfield Street,
1867.

TESTIMONY

Before the Committee of the Legislature on the Petition for a License Law, rebutting the Opinions of Professors of Harvard University.

Written out in full, by request from Remonstrants,

BY A. J. BELLOWS, M. D.

Question. *Where were you educated medically, and what, if any, special attention have you given to physiology and chemistry, as applied to hygiene?*

Answer. I graduated at Harvard Medical College in 1829; but for ten years afterwards gave no more attention to the subject than other medical practitioners. But from 1838 to 1858 I gave, on an average, one lecture a week on chemistry and physiology, as applicable to the preservation of health, to classes of young ladies, varying in number from one hundred to two hundred: in all, over five thousand. And as they were to be, — as most of them have since become, — the mothers and teachers of the rising generation, I felt a responsibility that kept my mind on that subject for the whole twenty years, more than on any other subject.

Ques. *Are alcoholic drinks useful for nutriment?*

Ans. Differing as I do on that point from the learned professors of Harvard College, — Holmes, Clark, Jackson, Horsford, and White, — and knowing that my opinion against theirs would have but little weight, I desire to support it by testimony which will be appreciated by the committee, as it must be by all the medical faculty.

Professor Carpenter, of the London University, has published a book on physiology, which, as late as 1860, has been republished in Philadelphia, edited by Professor Francis Guerney Smith. That physiology is now the standard work in this country and England. It is recommended by the professors of Harvard College, and you will find it on their catalogue just published. From that book I copy these words: —

"It may be safely affirmed that alcohol cannot answer any one purpose for which the use of water is required in the system, but, on the other hand, it tends to antagonize many of those purposes."

"Alcoholic liquids cannot supply anything which is essential to the due nutrition of the system."

"The action of alcohol upon the living body is essentially that of a stimulus, increasing, for a time, the vital activity of the body, but being followed by a corresponding depression of power, which is the more prolonged and severe in proportion as the previous excitement has been greater."

The U. S. Dispensatory, compiled by Professor Wood, of Philadelphia, the standard work on that subject in the United States, and also on the catalogue of books recommended to the pupils of Harvard University, also expresses similar opinions on the character and effects of alcohol. Professor Bige-

low's Materia Medica, the standard work when I was a member of Harvard School, expresses a similar opinion. And after hearing the extraordinary testimony of the professors the other day, I employed an intelligent student, who has just closed his studies, and is of course familiar with the standard books, to find, if he could, any word contradicting these opinions, and corresponding with the opinion expressed by the professors. He says he can find none. All agree that alcohol is a stimulus, which, literally, means a *goad*, a *whip*. When a horse gets stuck with a load too heavy for him, we use the goad or whip to excite the muscles to take the load up the hill. But, when once up, the careful driver will be sure that next time the load shall be lighter, or the horse made stronger with oats. What should we say to the teamster who persisted in the opinion that the whip afforded nourishment to the horse because he could be made to draw a heavier load by whipping, and therefore persisted in whipping him more severely as his strength became exhausted? But if this is not the position of these professors, I cannot understand them. You look astonished that the books and the professors should utter such different opinions. But let me give you an explanation in the words of one of these same learned professors.

In a lecture before the Massachusetts Medical Society, Professor Oliver Wendell Holmes used these words: —

"The truth is, that medicine, professedly founded on observation, is as sensitive to outside influences, political, religious, philosophical, and imaginative, as is the barometer to the changes of atmospheric density."

Books, having neither appetites nor fashions to protect, are not subjected to changes from outside

pressure, hence, for the last forty years, have taught the same doctrines. But the changes of opinion among medical men in Boston, in that time, in regard to the nutritive and medical qualities of alcohol, very forcibly illustrate the truth of the professor's statement. Forty years ago the people and the doctors almost all drank alcoholic drinks. It was then considered useful, though never, to my knowledge, nutritious, and all low typhoid diseases and consumptive patients were treated as now with alcohol. Fifteen, twenty, and twenty-five years afterwards, "outside influences" had pressed out all such opinions, and no man who cared a copper for his reputation would have subjected himself to ridicule by uttering the absurd opinion that a stimulus could be nutritious. At that time one of our most popular physicians, Dr. Worthington Hooker, wrote a prize essay, in which he stated that a low fever, which had, twenty years before, been fatal under the use of stimulants, "was often, in fact, a brandy and opium disease."

But another twenty years pass; temperance efforts have been suspended or greatly relaxed; the pressure is taken off, and the mercury falls; and now Professor Holmes believes "alcoholic combinations to act dietetically upon the human system as well as medically."

But admitting they do act dietetically, what excuse have we for resorting to that which all admit to be capable of doing harm, when in every part of the world Nature has provided, for summer or winter, in sickness and health, just the nutriment we need? Allow me, for a moment, to refer to this beautiful provision by which we are thus supplied with all we need.

When man was created, it is said, "Out of the ground made the Lord God to grow every tree that is pleasant to the sight and good for food," "and

every herb bearing seed which is upon the face of the earth;" and all these, together with "the fish of the sea, and the fowl of the air, and every living thing that creepeth, were given him for meat, even as the green herb;" so that he could live with the polar bear in Greenland, and find at his hand the heat-producing fat and flesh of the seal and the whale; or, under the equator, with the monkey, and find the cooling fruits; or here, in a temperate zone, where cold and heat alternate, might have, in the fruits, and grains, and animals, an abundant supply for summer or winter; and in sickness might have, always ready at hand, the cooling fruits for fever, and sugar, and flour, and butter to warm him when cold. And, besides all this, God has given us a natural relish for just the article which we most need. Why, then, resort to an unnatural product of decomposition and decay to supply wants already so abundantly provided for?

Ques. *Did you ever know Professor Holmes to express a different opinion from that which he gave the other day?*

Ans. I have seen, in his "Currents and Counter-Currents," a statement which might be construed differently; but I can quote only from memory. "Throw out opium, throw out a few specifics, which our art did not discover, throw out wine, and the vapors which produce the miracle of anæsthesia, and I firmly believe that, if the whole Materia Medica, as now used, could be sunk to the bottom of the sea, it would be all the better for mankind, and all the worse for the fishes."

Ques. *Is alcohol useful in promoting digestion in general debility or in consumption?*

Ans. Keeping in mind the fact that, upon the highest medical authority, alcohol is only a stimulant, I have no difficulty in determining how far alcohol is useful and how far injurious.

I have sat by the bedside, and, watching the sinking pulse, and fearing lest nature might not be able to carry the load, I put in the goad, and in three minutes have felt the circulation rise; but in a few minutes more it would sink again, and the stimulant must be renewed, or it would sink lower than before. By careful watching and spurring I have kept up the heat and circulation till a little nourishment could be digested, and perhaps the patient saved. But this is all the use I have ever made of alcohol as a medicine.

To whip and spur poor human nature all the way down through consumption to the grave, increasing the stimulus at every step as nature flags, seems to me absurd, cruel, and unphilosophical in the extreme. If stimulants should be thus applied to a jaded horse, its owner would be tried for cruelty to his beast; and yet there are said to be hundreds and thousands of men, women, and even children, now subjected to a similar mode of treatment in Boston and vicinity.

In an essay which obtained the prize of two hundred dollars, and which Dr. Churchill says displays great research upon the subject of the effects of alcohol, Dr. Bell comes to the following conclusions: —

"1. The opinion so largely prevailing as to the effects of the use of alcoholic liquors, viz., that they have a marked influence in preventing the deposition of tubercle, is destitute of any foundation.

"2. On the contrary, their use predisposes to tubercular deposition.

"3. Where tubercle already exists, alcohol has no

effect in modifying the course usually run by that substance.

"4. Neither does it mitigate the morbid effects of tubercle upon the system in any stage of the disease."

Ques. *Are the drinking usages of society to be deplored?*

Ans. I think it is to be deplored that a professor of Harvard University should feel so little the responsibility of his position, and care so little for the sad influence his opinion may exert on the young men of Boston, as to be willing publicly to utter such a sentiment. But I am thankful he stands alone in his unenviable position, and that we have an ample antidote for the baneful influence which might otherwise be the result.

Professor Wood, in his Dispensatory, says the habitual use of alcoholic drinks produces deplorable consequences. Carpenter's Physiology says the physiological objection to the habitual use of even quite small quantities of alcoholic drinks rests upon the following grounds: "They are universally admitted to possess a poisonous character." "They tend to produce a morbid condition of the body at large." "The capacity for enduring the extremes of heat or cold, or mental or bodily labor, is diminished rather than increased by their habitual employment."

In a lecture of Professor Jacob Bigelow, in 1825, he used the following words, which I recorded at the time: —

"Alcohol is highly stimulating, heating, and intoxicating, and its effects are so fascinating that, when once experienced, the danger is, that the desire for them may be perpetuated." "Many patients have become gradually and imperceptibly intemperate under the sanction and guidance of a physician."

But forty-two years afterwards his son publicly announces his opinion, that "the drinking habits of society are not to be deplored." Let these conflicting opinions go to the world together, bane and antidote, that when fast young men say to their mothers or wives, as many, undoubtedly, have said already, "I'm all right; Professor Bigelow says so," these wives and mothers may be encouraged to make one more effort to save them from destruction, by quoting what the always highly-esteemed and now venerable father says of the dangers of becoming "gradually and imperceptibly intemperate." These last named timely words have saved many a man from intemperance, as I can testify. They were said to a class of one hundred young men, of which I was one; and then, forty-two years ago, I resolved never to have the responsibility of leading my patients "imperceptibly on to intemperance;" and from that day to this I neither drank alcohol myself or prescribed it to a single patient, except, as I have before described, from my own hand, or from that of a faithful nurse; and, while I have the pleasure of knowing that I never made a drunkard by precept or example, I have equal assurance that no patient has ever had an additional pain or an additional hour of sickness for the want of alcohol.

But how often has my heart been saddened by witnessing illustrations of Professor Jacob Bigelow's statement concerning patients being led to intemperance by the guidance of their physician. Not long since an interesting lady, not thirty years old, came to me for advice. She had been subject, for two or three years, to terrible internal cramps from indigestion, and was advised by her physician, a professor of Harvard University, to take gin. At first she only took it when the cramps occurred, and it re-

lieved her, but soon she took it to prevent their recurrence, and it seemed for a time to succeed; but as she never knew when the pains were coming, she never knew when to stop the gin: and after two years her system had become so accustomed to the stimulus that no quantity short of that which would produce actual inebriation would either prevent or relieve the distress. In that condition I found her, and of course advised to break off the habit at once, and take appropriate remedies. In two days she returned, and said she had had no return of the cramps, but felt as if she must die unless I allowed her gin, or a substitute. I put the case as it clearly stood. She must break away from gin then, or be a slave to it for life. She braced herself up to the resolution—"I will die now, sober, rather than live to be a drunkard;" and many a time since has she thanked me for assisting her in that resolution. And many a similar case has come under my observation, only differing in this, they never were able to break away from the snare that had caught them. Drinking habits of society not to be deplored, when from them are made more than three fourths of all the crime and poverty in the country, and when fifty thousand drunkards' graves are filled by these habits every year! Then let the professor tell me what, in all this world of sin and suffering, is to be deplored.

Ques. *Does alcohol tend to increase the term of life by preserving the tissues ?*

Ans. There may be a sense in which Professor Clark's statement is true. But the question with me is, What is to be gained by such a process? Professor Yeomans, of New York, says, "It has been demonstrated that alcoholic drinks prevent the natural changes going on in the blood, and obstruct the nutritive and reparative functions."

Carpenter's Physiology says, "Alcoholic drinks diminish the waste of the tissues." That is, alcohol suspends the action of the whole system, brain and muscle, and tends to bring us down to a state of torpidity, like snakes and toads, who have wonderful powers of preserving their tissues by masterly inactivity. The professor did not prescribe the form in which alcohol should be taken, nor the regimen to accompany it in order best to succeed in preserving the tissues; but, "holding the mirror up to nature," I think I can see and supply the deficiency. In the first place, you should sit perfectly still, for every motion tends against the preservation of the tissues; then you should live in the most impure air possible, for every breath of air containing oxygen burns up the waste of the tissues, and counteracts the desired influence; and then you should keep the tissues well preserved in lager beer, this form of alcoholic drink being best adapted to bring us into a state of torpidity. Mr. Chairman, did you ever see a toad, a motley-faced, blubber-lipped toad, sitting in the corner of the garden, in one spot, hour after hour, and day after day, with just energy enough to wink, and to catch a fly if he comes within an inch of his nose? — a perfect personification of a bloated, beer-drinking, Pennsylvania Dutchman, who

will sit in the chimney-corner from morning till night, with just energy sufficient to raise the beer to his lips, and to call for more when his mug is empty? How long he can succeed in preserving his tissues has not yet been fully ascertained; but his prototype, the toad, sometimes succeeds wonderfully. Before a rain, the toad will sometimes muster up energy sufficient to crawl up into the fork of a tree, and there fill his big mouth with air, and blowing it through his lips, will utter a kind of trumpet sound, to notify us that a rain is coming; and when it comes, he crawls under the rough bark in the fork of the tree, and there waits and winks till the rain is over. Now it has happened that, waiting too long, the old bark becoming dry, he is bound in and can never get out. Year after year he stays there, winking in summer and suspending his work in the winter. Meantime the tree grows over him, and after many years, perhaps, is cut down, and there the toad is, still alive and winking.

Now this is not exactly an illustration of the power of alcohol to preserve the tissues, unless the toad has the power of manufacturing his own alcohol out of the carbon and hydrogen with which he was all the time surrounded; but it does illustrate the condition towards which all tissues must be brought to be preserved by alcohol. And the question comes up, What is the use of such tissues? What is a Dutchman good for who does nothing but drink lager beer? Professor Jackson's cabinet of morbid tissues is too small to accommodate him, and that is the only place for morbid tissues preserved in alcohol.

Professor Clark's predecessor used to teach us that it was not desirable to preserve the tissues; that the more we exercised and wore out the tissues, and the purer the air we lived in, and the more we avoided

the stupefying influence of alcohol, the oftener the tissues would be renewed, and the more healthy and useful we might become.

QUES. *Is opium the greatest danger to this community?*

ANS. Opium and alcohol both belong to the same class of narcotics, of which Professor Bigelow, Senior, says, "Their effects are so fascinating that, when once experienced, the danger is that the desire for them may be perpetuated." And these articles have each its particular friends and admirers. Now, I agree with Shakspeare, that "a friend should bear his friends' infirmities," but I do not concede to Professor Clark the right to exaggerate the faults of his neighbor's friend. Occasionally I have seen patients becoming "gradually and imperceptibly intemperate" in the use of opium, under the sanction and guidance of a physician, to use again the words of the professor before quoted; but where I have seen one such case, I have seen hundreds led to destruction by the use of alcoholic drinks, under similar guidance and sanction.

REVIEW OF GOV. ANDREW'S ARGUMENT,

SO FAR AS RELATES TO ALCOHOL AS A POISON.

THE fallacy of Gov. Andrew's argument consists in an attempt to prove that alcohol is not poisonous, from the fact that sugared alcoholic drinks, and the light wines especially, having an aromatic, agreeable flavor, are excellent nourishment. Carnaro lived fifty-eight years on twelve ounces of food and fourteen ounces of light wine each day, which might or might not have contained a little alcohol. But how can Gov. Andrew, or Mr. Lewes, or anybody else, infer from this fact that alcohol is nutritive? Many a stomach becomes so accustomed to the presence of opium, tobacco, and even arsenic, as to digest food, and the owner live, perhaps, as long as Carnaro; but does that prove that opium and arsenic are nutritious? I once heard of a farmer who claimed that sawdust and Indian meal would fatten hogs, for he had tried the mixture; but when asked what proportions were best adapted to the fattening process, he said he thought the less sawdust and the more meal the better.

Let two starving men have nothing but alcohol and water, and let one drink the pure water and the other a mixture of alcohol and water, and the water drinker will live the longest — the experiment has been tried

many a time, accidentally on man, and for the sake of experiment on other animals. That alcohol *per se* is not nourishing, but poisonous, I have never known questioned except by Gov. Andrew and his witnesses.

Professor Yeomans, of New York, in a very able paper on Alcohol and the Constitution of Man, says, "Chemical experiments have demonstrated that the action of alcohol on the digestive fluid is to destroy its active principle, the pepsin, thus confirming the observations of physiologists, that its use gives rise to the most serious disorders of the stomach, and the most malignant aberrations of the entire economy."

"It is evident that, so far from being the conservator of health, alcohol is an active and powerful cause of disease, interfering as it does with the respiration, the circulation, and the nutrition; nor is any other result possible." "Nothing can be more certain than that it is a powerful antagonist of the digestive process." "It prevents the natural changes going on in the blood." "It impedes the liberation of carbonic acid, a deadly poison." "It obstructs the nutritive and reparative functions." "It produces disease of the liver." "It has a powerful affinity for the substance of the brain, being, indeed, essentially a brain poison." If these effects do not prove alcohol poisonous, where shall we look for proof that any substance is poisonous? But experiment can never settle this question, nor any other question pertaining to vital chemistry. He who made man and knows how to keep him in repair, has plainly given us laws of nutrition, and, as in all other important matters, has fixed a penalty for the breach of His laws. Let us read a chapter from God's Book of Nature.

The testimony of His written word is, that He formed man out of the dust of the earth, and He told him that out of the ground, by the sweat of his face,

he should be furnished with the means of keeping his body in repair till unto dust he should return. To enable him to do this, He had previously prepared, in every foot of dust on the face of the earth, all the elements needed for his repair, except those always to be found in air and water. Take from Greenland a shovelful of earth to Professor Horsford, and he will find in it every element that he can find in any human body; or take it from Africa, or any other place, from the equator to the pole, and no element is wanting. Ages of time must have been required to triturate the rocks that contained iron and lime, and other mineral matters needed for the repair of the system, and ages more to form and decompose the vegetable matter necessary to its supply; and still other ages to float these materials over the surface of the earth, and so mix them that every foot of earth should contain some of all these elements. But all this was done for man before man was made. And then was made that wonderful arrangement by which these elements should be so organized as to be adapted to the digestive organs, and to be received into, and be incorporated with, the different organs for the use of which they each were intended. Every tree, and plant, and shrub was to be meat for man, directly and indirectly; and therefore every tree, and plant, and shrub was endowed with power to take from the earth all the elements that were needed, and organize them into nourishment; and there has never been devised a plan by which a single particle of nutriment could be obtained in any other way. Plant a grain of wheat, and, while it grows, its roots are taking from the earth, one by one, every element in the human body; and when it is matured, analyze a single grain, and every element necessary for growth or nutriment is found in it. Professor

Horsford can take out these elements, but he cannot put them back again, or make them subserve the purposes for which they were intended. Nature allows no such interference with her plans; and to prevent such interference, she has placed a penalty against any such transgression of her laws. Disorganize a grain of wheat, and its elements become poisonous. Let your bread become changed by too long keeping, and it must not be eaten; it is poisonous; its sugar is changed into alcohol. Its elements are there, but they cannot be allowed to enter the composition of the system; they have been disorganized, and Professor Horsford cannot so reorganize them as to adapt them to the system. Agassiz can analyze an egg, and show you that all the elements of the chicken are there, and even show you what elements will compose the feathers and what will make the muscles; and, if any man under heaven can make a chicken out of these elements, he can: but will he try to do it? Professor Horsford can analyze alcohol, and see that its elements are the same as the elements of sugar; but he cannot organize them into sugar, or make them take the place of sugar. I would as soon undertake to make a chicken out of a poached egg, as to make a particle of flesh or fat out of alcohol; indeed, the experiment would be safer, for the penalty of attempting to mend a man with alcohol has been proved to be awful, as we have seen in the diseases produced by such experiments.

The Medical Use of Iron

is another instance in which learned men lose sight of Nature's laws, and illustrates the danger of attempting to smuggle into the system any disorganized material. Under the sanction and advice of the

Professors of Harvard, and their pupils all over the state and country, disorganized iron and phosphates are given to supply the place of the iron and the phosphates of lime and soda that are sifted out of the wheat in order to make superfine flour.

It is well known that our feeble, pale-faced, chlorotic girls, and our feeble-minded, toothless men, women, and children, generally, are brought into that deplorable condition mainly by living on sugar, butter, and superfine flour, out of which have been taken the elements that make bone and red blood, and give energy to the brain and nervous system; and the common-sense remedy for all these terrible evils is to be found in a simple resort to Nature's own storehouse.*

But instead of advising our pale-faced girls to supply their systems with iron, found in abundance in many articles of food, organized and adapted to supply it, the resort is to some form of iron never organized in Nature's laboratory, and therefore never prepared to enter into the composition of the blood at all, but subject to the penalty which Nature always affixes to the breach of her laws. Nature endeavors to protect the stomach from receiving it at all, by making the taste offensive; but it must go down, the doctor said so; and the results will be seen by

* Since hearing the testimony, brought out by Gov. Andrew, of the Professors of Harvard College, showing how little attention is given to the application of philosophical principles to hygiene, even in the institution that stands first in the country, I have felt, as I never before felt, the necessity of some practical book developing the laws of Nature, adapting them to the understanding of common intellects, and showing what articles of food are injurious, and what contain the elements adapted to the intellectual, muscular, or the sedentary employments of life, and what are adapted to our condition under the different changes to which we are subject, after the manner in which horticulturists treat of the adaptation of soil to the wants of different plants. Such a book shall be forthcoming, Providence permitting.

testimony which, in Harvard School, is considered of the very highest authority.

I have already quoted from the standard works on physiology the opinion that alcoholic liquids cannot supply anything which is essential to the due nutrition of the system, but, on the other hand, are poisonous just in the proportion to the amount of alcohol they contain; and we heard the testimony of all but Professor Horsford, that this question is in doubt. Since then I have made diligent search to find a physiologist who pretended to prove that alcohol, or any other substance containing the elements of the human system, could ever be made to enter into the composition of the body, except by being organized and fitted for digestion in the organs of some plant, or shrub, or tree, or other vegetable organization. I find only one author who claims to bring any such proof, and this proof I can show is fallacious.

Frederick William Headland, of the Royal College of Physicians, in London, has a book on the action of medicines, which has recently been published in this country, and which is adopted by the Harvard Professors, and which goes more thoroughly into the subject than any other author. He places alcohol as a stimulant and narcotic, without the pretence that it can be organized in the body, to make any part of its tissues or fat; but, in proof that iron from the shops does enter into the blood as a part of it, he says, "In some cases of chlorosis the blood was analyzed before giving iron and after it had been given a few weeks, and the blood was found to contain more of red globules after taking the iron than before; and this is accepted as positive proof that the red globules were made of the iron thus introduced. But I can bring scores of cases under homœopathic treatment where the results are similar and more striking, without

using a particle of iron; showing that the effect of the iron must have been that of a mere stimulant, promoting sanguinification from the food taken in the mean time, and that it is subject to the same penalties as in regard to alcohol for interfering with Nature's laws. But I propose to offer no evidence of the truth of my position but such as Gov. Andrew and the Harvard Professors will acknowledge to be authority.

Dr. Churchill, the same gentleman who furnishes the evidence of the deleterious effects of alcohol, says phosphorous acid and its preparations "are the most valuable blood-creating agents known, as is shown by the fact that, more rapidly than any other medicine, it increases the quantity and color of the blood." And this, to my mind, is proof that red blood is not made from the iron, or at least that something else besides iron will produce the same effect. But Churchill condemns iron on account of its terrible influence on the system, and proves his position by quoting M. Trousseau, one of the very highest authorities in the world, who, he says, "has just given utterance to an authoritative and positive statement that will, no doubt, surprise the profession everywhere. He declares that iron in any form, given in chlorotic affections, to patients in whom the consumptive diathesis exists, invariably fixes that diathesis, and hastens the development of the tubercles. The iron may induce a factitious return to health; the physician may flatter himself that he has corrected the chlorotic condition of his patient; but, to his surprise, he will find the patient soon after fall into a consumptive state, from which there is no return. This result, or at least its hastening, M. Trousseau attributes to the iron. The assertion is a most startling one. M. Trousseau is, nevertheless, so certain of what he says, that he denounces the administration of iron as criminal in the highest degree."

And yet, probably, in hundreds of houses in Boston may be found a bottle of iron, in company with the more diffusive, and therefore less dangerous stimulant, alcohol — both equally illustrating the folly and sin of interfering with Nature's eternal laws. And it is a curious fact that this same J. Francis Churchill, who gives us such positive proof that iron and alcohol are poisonous, should, at the same time, recommend phosphoric acid, a stimulant of the same class, but much more poisonous than either — his own caution in the use of it at the same time proving that it does act injuriously. He says, in his book on the use of these phosphates, p. 19, "Every case has shown, within a very brief time after the commencement of treatment, well-characterized symptoms of plethora," and refers to cases of hemorrhage from the lungs, hemorrhoids, &c., and one patient was troubled by marked symptoms of cerebral congestion.

Professor Horsford's Phosphatic Bread

comes into the same category; and Dr. Churchill proves that the forms of phosphorus which Professor Horsford uses in his bread are much more poisonous than his own phosphates, and on p. 88 he makes this statement of the opinion of four distinguished German chemists: "Woehler and Frenich, basing their opinions as much upon their own experiments as upon those of Weigel and Krug, have concluded that phosphorous acid has a poisonous effect analogous to arsenic."

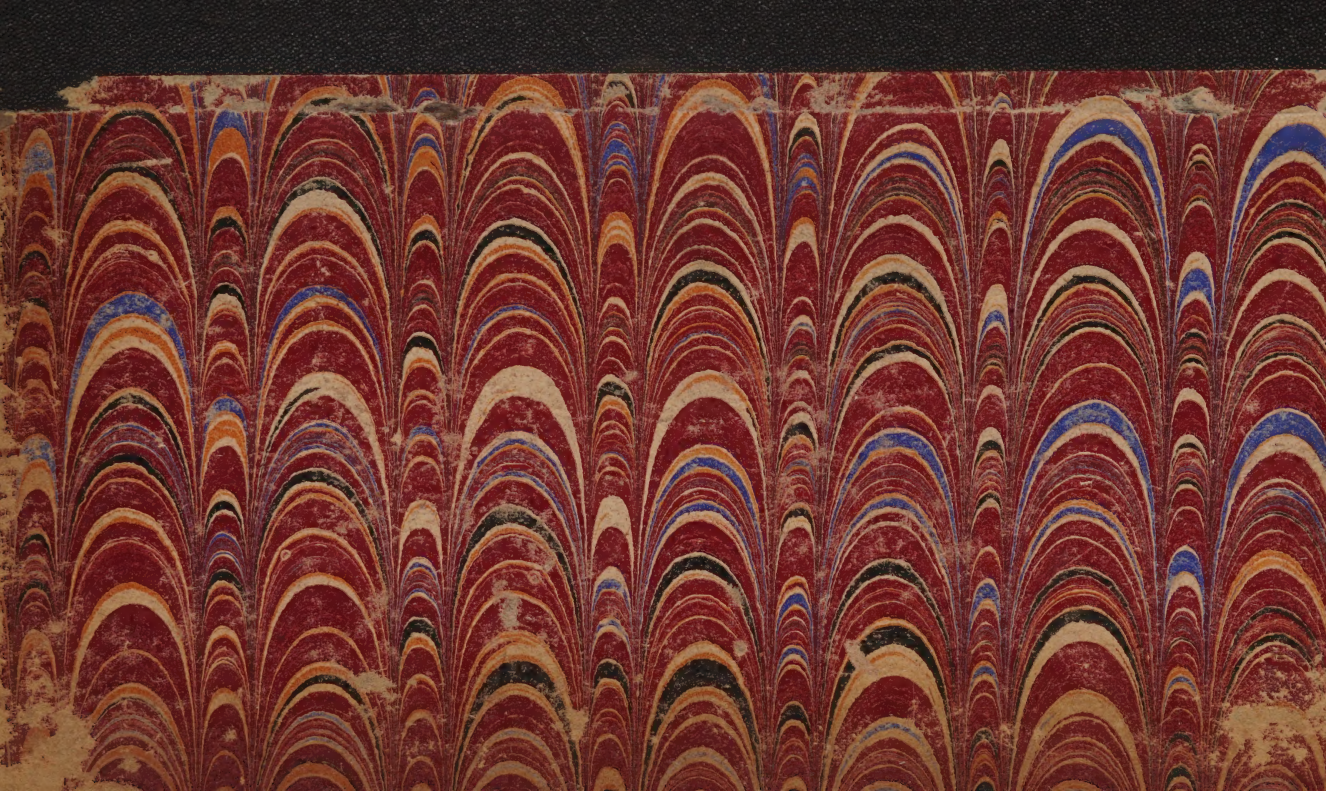
This acid, Professor Horsford recommends to be mixed with flour, instead of yeast, to make bread that shall be a substitute for Graham flour bread, which contains the phosphates in their natural organized state; and to prove that his bread must be healthy, he says, "the French army was at one time

supplied with soup-cakes prepared from bones, with the aid of Papin's digester. The cakes prepared from bones, liquefied at an elevated temperature and pressure, supplied phosphates in quantity greatly beyond the normal wants of the soldiers' diet, but Nature appropriated such portion of the nutriment offered as she required, and the remainder was rejected."

This certainly does not prove that Professor Horsford's phosphates are wholesome. If it does, it likewise proves that nitric acid is wholesome; for nitrogen, the basis of nitric acid, is the most important element in beefsteak. But it does illustrate my position.

Phosphoric acid in bones was organized there through the grass and the grain which the animal ate, and the process of cooking did not disorganize it. It was, therefore, adapted to be taken up by the organs which needed it. The professor's phosphorus was disorganized by a chemical process, and is therefore a poison, just as the nitrogen in aqua-fortis, not being organized and fitted for digestion by Nature's process, is a poison. Nitrogen in beefsteak was thus organized, and is therefore wholesome. We have thus developed a controversy, as I understand it, between the learned professors, whom Gov. Andrew quotes, and the unchanging laws of the God who made them. The law is clearly written, that every organ must be repaired, as it was made, out of the dust of the ground, and that this dust can be fitted for the acceptance of the human organs only through the vegetable apparatus which is so wonderfully provided; that the stomach and every other organ is adapted to receive and appropriate nourishment from the food thus organized, just as the eye is adapted to receive and appropriate the light prepared for that organ. Now if you add anything to, or take

anything from, the natural food, you interfere with Nature's plans, and are subject to a penalty; or, if you put into the stomach anything but the food thus provided, and water, which is also provided for drink, you interfere with the digestive process, and are subject to a penalty, just as you suffer pain if anything but light enters within the lids of the eye, or anything but pure air is admitted into the lungs; and as light, and nothing else, is pleasant to the eye, so appropriate food and drink, and nothing else, are naturally pleasant to the stomach; and the natural appetite indicates what is useful, and rejects what is injurious, and everything of food or medicine forced on the stomach against the taste, which is its natural guardian, is subject to a penalty. If you need iron for the blood, or phosphates for the bones and brain, or sugar to warm you, you have them at hand in an agreeable form in the flesh of animals, and in the grains, and fruits and vegetables, organized on purpose to supply these demands. Attempt to get these useful elements out of disorganized alcohol, or phosphatic bread, or the disgusting iron medicines, you break Nature's laws, and must suffer the penalty. This is Nature's testimony. But Governor Andrew's professors say they can smuggle into the system phosphates for the brain by disguising them as bread, or entice the organs to accept the elements of sugar in the bewitching guise of alcohol; and hundreds of doctors whom they have taught are actually attempting to compel the stomach and the other organs of thousands of our citizens to accept iron, and other elements, in the disgusting shape in which they come from the chemist's laboratory, Nature struggling against their efforts at every step; and you have seen the results of these struggles as depicted by Trousseau, Yeomans, and Bell, in the diseases described by these eminent practitioners.

In one way only can these professors get back into the system a single particle of disorganized sugar, or phosphoric acid, or iron. They can throw them into their garden, and let some plant or tree take up their elements and manufacture them into edible seeds, and fruits, and vegetables; then they can be received and appropriated by the different organs, or the blood, as they are needed, not otherwise.*

* To those who know nothing of science it may seem impossible that learned professors could lose sight of a law so plainly written in God's Book of Nature; but to those who have devoted a lifetime to study, and know how little can be learned in one short life of all of Nature's laws, and how necessary, in order to know anything perfectly, it is to devote one's time and thoughts to some speciality, it is not strange; and my apology for daring thus to criticise the opinions of my betters is this: I have probably given more weeks to the study of this subject than they have given hours.